

REMARKS

§112 Rejections

Each of claims 13 and 14 was rejected under the second paragraph of §112 as being unclear in view of the phrase that "an end is adapted to receive a mating material for a wire".

To obviate this objection, this phrase has been deleted and the phrase added of "end of said pin being adapted to receive an engaging terminal for a wire". Originally, these claims used the term "mating terminal" to mean a terminal closely joining or engaging an end of the pin which was specified in a prior claim on which they depend (11 and 12 respectively) as being a solid end of the pin.

With these amendments, claims 13 and 14 are believed to be clear, definite and to comply with the requirements of the second paragraph of §112.

§103 Rejections

Each of claims 1-12 and 15-35 were rejected under §103 as being unpatentable over the Zeigler '447 patent in view of the Zeigler '051 patent and with respect to dependent claims 5, 7 and 9 further in view of the Mizuno '112 patent, and with respect to dependent claim 16 further in view of the Lehmann '508 patent.

Zeigler, Jr. U.S. Patent 3,678,447

The Zeigler '447 patent discloses a disconnectable co-axial cable assembly with a female coupling 1 releasably threadably connectable with a male coupling 62. The female coupling has a center contact received in a dielectric plug 26 press fit in a

threaded outer conductive body 2. The center contact has a central sleeve 34 with a skirt 38, a slotted sleeve 32 at one end in which a center wire 60 of a co-axial cable 56 is removably slidably received, and at the other end a plurality of fingers or tines 36 which in assembly removably slidably receives a pointed pin 90 of the center contact 86 of the male coupling 62. In the male coupling, the center contact 86 is carried by a dielectric plug 80 press fit in a conductive body 64. At its other end, the center contact 86 has a skirt 88 and a slotted sleeve in which the center wire 60' of a co-axial cable 56 is removably slidably received. When the female and male couplings are threaded together, the male pin is removably slidably received between the fingers or tines 36 of the female center contact and the threaded bodies provide a removable electrical connection of the outer conductors of the two separate co-axial cables 56, 56'.

Zeigler, Jr. U.S. Patent 3,553,051

The '051 patent discloses a disconnectable connector 18 for co-axial cables 10 with a releasably connectable male half 20 and a female half 22. The female half has a center contact 60 slidably received in a dielectric body 56 carried by a threaded outer body 52. The center contact 60 is split or slotted at one end to form fingers which in assembly slidably receive the center wire 16 of the co-axial cable 10 removably carried by the male half 20. The other end of the center contact 60 is threaded at 58 for releasable attachment to the center wire 16 of the co-axial cable 10 received in the female half 22. This threaded connection also retains the center contact 60 in the dielectric body 56 of the female half. When threaded together, the conductive outer bodies 20 and 22 releasably electrically interconnect the outer conductors 12 of the co-axial cables.

Mizuno U.S. Patent 4,373,112

The Mizuno '112 patent discloses a cable holder with an annular mounting body 1 having a rigid annular core 4 with an integral collar 7 integrally molded with an insulating plastic central tube 6. In assembly, the body 1 is inserted through a hole in the panel 40 and attached thereto by a threaded nut 34. An insulated electric cable A is inserted through the body and releasably retained therein by a clamp 3.

Lehmann U.S. Patent 6,264,508

The Lehmann '508 patent was cited for its showing in Fig. 1 of tapered circumferential surface segments on the free ends of elastic fingers 12 of a female contact of a releasable or removable electrical connector.

Applicants' Invention

Applicants' invention as defined by amended claim 1 is a pass-through electrical connector assembly having a body of an electrically insulative and somewhat yieldable material such as plastic or rubber, at least one hole through the body, an electrically conductive pin forced through the hole and retained in the body, and the pin having

(1) first and second ends with a recess therein constructed to receive and permanently attach a separate electric wire thereto,

(2) an intermediate solid portion between the recesses constructed to separate the wires and provide a fluid-tight seal between the wires and the pin,

(3) a tip adjacent the first end of the pin having at least one barb engaging the body as the pin is forced through the hole,

(4) a head adjacent the second end of the pin and having a shoulder constructed to engage the body when the pin is forced into the hole, and

(5) a circumferentially continuous exterior surface between the ends of the pin which is press fit into the through-hole with an interference fit with the body forming a fluid tight seal between the pin and the body.

This specific construction and arrangement provides a pass-through connector having the significant practical advantages of providing a fluid tight seal which is highly leak resistant, reliable, may be made as an integral portion of a product, is relatively small, of simple design and extremely easy and inexpensive to manufacture and assemble and in service has a long, useful life.

Claim 1 is Patentable

Neither the basic concept, specific construction and arrangement nor the significant practical advantages of the pass-through electrical connector with a fluid tight seal as defined by amended claim 1 is disclosed, suggested or taught by the proposed combination of the Zeigler '447 and '051 patents for at least the following reasons. Neither of these Zeigler patents disclose, suggest or teach any pass-through connector at all, any sealed connector assembly at all, any connector having a conductor pin permanently attached to a conductive wire, any pin providing a cleaning of the hole by the barb scraping the hole clean as the pin is inserted to insure proper sealing, any pin received with an interference fit in the body of a somewhat yieldable electrically insulative material to provide a fluid tight seal between the pin and the body or the pin

having a solid intermediate portion between its ends to provide a fluid tight seal between the wires and the pin.

To the contrary, these references teach away from applicants' invention by disclosing releasable or disconnectible co-axial cable connector assemblies in which the wires are slidably received and removable from the connectors, the connectors are described as shells which implies they have a through-bore through which fluids could flow and in any event there is no fluid-tight seal between the conductor and either the dielectric body or the housing of these connectors. Moreover, it is well known to persons skilled in the art that typical co-axial cable connector assemblies do not provide any fluid tight seal.

Neither of these references disclose, suggest or teach which of their numerous elements should be discarded and which selected, re-arranged and recombined with elements not disclosed in these or any other cited prior art references to produce applicants' basic concept, specific construction and arrangement and its significant practical advantages, all of which are part of the subject matter a whole which must be considered in determining non-obviousness and patentable under §103 in view of the prior art.

Moreover, for at least these reasons, since neither of these references, whether considered alone, in combination or with the skill of the art, disclose, suggest or teach applicants' basic concept, specific construction and arrangement and its significant practical advantages, they must have been selected and combined utilizing the teachings of applicants' invention which use of hindsight is impermissible and expressly precluded in applying the non-obviousness test of §103.

Accordingly, for at least these reasons, claim 1 as amended defines novel and patentable subject matter under §103 over this proposed combination of the Zeigler '447 and '051 patents as well as in combination with the other cited references.

Claims 22 and 30

Independent connector assembly claim 22 and independent method of making a connector assembly claim 30 are broader in some respects than claim 22. However, as amended, they are believed to define non-obvious and patentable subject matter under §103 over the proposed combination of the Zeigler '447 and '051 references, as well as the other cited art for at least essentially the foregoing reasons for which amended claim 1 does so.

Dependent Claims 2-21, 23-29 and 31-35

Each of the remaining claims is ultimately dependent on one of the amended independent claims 1, 22 and 30.

Accordingly, all of the dependent claims are believed to define patentable subject matter whether considered alone or in combination over the Zeigler '447 and '051 patents as well as in combination with the other cited patents for at least the foregoing reasons.

Dependent Claims 10, 11, 13 & 31-35

Each of dependent claims 10, 11 and 13 further defines the connector assembly and each of dependent claims 31-35 further defines the method of making the connector assembly as having or providing a blind hole in at least one end of the pin which opens

into the end of the pin and has a circumferentially continuous sidewall and is constructed to receive a separate wire in the blind hole which is permanently attached therein. Neither this specific construction and arrangement nor its significant practical advantages as defined by each of these dependent claims is disclosed, suggested or taught to skilled persons by any of the cited references whether considered alone or in combination and therefore each of these dependent claims is believed to define non-obvious subject matter under §103 and to be patentable for at least these additional reasons.

Claim 8

Upon the allowance of independent claim 1, it is requested that claim 8, dependent thereon and which reads on the non-elected species of Figs. 9-15, also be allowed.

Conclusion

As amended, all of the claims are believed to comply with the requirements of the second paragraph of §112 and to define novel and patentable subject matter under §§102 and 103 in view of the cited prior art. Accordingly, reconsideration and allowance of this application as amended is respectfully requested.

If, after considering this Response, the Examiner believes any of the claims are not in a condition for allowance, a telephone interview with the Examiner is requested by applicant's undersigned attorney William Francis so that immediate consideration can be given to any further amendments suggested by the Examiner or otherwise needed to place all of the claims in a condition for allowance. The Examiner is respectfully requested to

initiate or set a time for this interview by telephoning William Francis at (248) 689-3500 who can normally be reached Monday through Friday between 9:00 A.M. and 5:00 P.M.

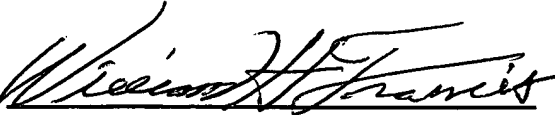
It is believed that no additional fees are due or owing to the Patent Office in view of this Response. However, if the Patent Office determines that any claim fees are due, it is requested that they be charged to our Deposit Account 50-0852.

Respectfully submitted,

Reising, Ethington, Barnes, Kisselle, P.C.

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By

A handwritten signature in cursive script, appearing to read "William H. Francis", written over a horizontal line.

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